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<input type="checkbox"/>	L42	L41 and (endpoint\$ or end-point\$,or (end near point\$))	4
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<input type="checkbox"/>	L5	L4 and (subscib\$ or subsript\$ or publish\$)	748
<input type="checkbox"/>	L4	(endpoint near reference)	948
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2 [Grid-filtered region-based data distribution management in large-scale distribut](#)

☒ document 1 of 2 Order Document

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Accession number & update

0009296124 20070218.

Title

Efficient probabilistic subsumption checking for content-based publish /subscribe systems.

Conference information

Middleware 2006. ACM/IFIP/USENIX 7th International Middleware Conference. Proceedings, Melbourne, Vic., Australia, 27 Nov.-1 Dec. 2006.

Source

Middleware 2006. ACM/IFIP/USENIX 7th International Middleware Conference. Proceedings (Lecture Notes in Computer Science Vol. 4290), 2006, p. 121-40, 17 refs, pp. xiii+423, ISBN: 3-540-49023-X. Publisher: Springer-Verlag, Berlin, Germany.

Author(s)

Ouksel-A-M, Jurca-O, Podnar-I, Aberer-K.

Editor(s): van-Steën-M, Henning-M.

Author affiliation

Ouksel, A.M., Dept. of Inf. & Decision Sci. & Comput. Sci., Illinois Univ., Chicago, IL, USA.

Abstract

Efficient subsumption checking, deciding whether a **subscription** or **publication** is covered by a set of previously defined subscriptions, is of paramount importance for publish/subscribe systems. It provides the core system functionality-matching of publications to subscriber needs expressed as subscriptions-and additionally, reduces the overall system load and generated traffic in distributed environments. As the subsumption problem was shown previously to be co-NP complete and existing solutions typically apply pairwise comparisons to detect the subsumption relationship, we propose a Monte Carlo type probabilistic algorithm for the general subsumption problem. It determines whether a **publication/subscription** is covered by a disjunction of subscriptions in $O(k m d)$, where k is the number of subscriptions, m is the number of distinct attributes in subscriptions, and d is the number of tests performed. The probability of error is problem-specific and typically very small, and sets an upper bound on d . Our experimental results show significant gains in term of **subscription** set reduction which has favorable impact system performance as it reduces the total computational costs and networking traffic. Furthermore, the expected theoretical bounds underestimate algorithm performance because it performs much better in practice due to introduced optimizations, and is adequate for fast forwarding of subscriptions in case of high **subscription** rate.

Descriptors

☒ COMPUTATIONAL-COMPLEXITY; ☒ MESSAGE-PASSING; ☒ MIDDLEWARE; ☒ MONTE-CARLO-METHODS; ☒ OPTIMISATION; ☒ PROBABILITY; ☒ TELECOMMUNICATION-TRAFFIC.

Classification codes

C6150N Distributed-systems-software*;
C1140G Monte-Carlo-methods;
C1140Z Other-topics-in-statistics;
C4240C Computational-complexity;
C1180 Optimisation-techniques.

Keywords

subsumption-checking; content-based-publish/subscribe-systems; core-system-functionality-matching; system-load-reduction; distributed-environment; Monte-Carlo-type-probabilistic-algorithm; **subscription**- set-reduction; networking-traffic-reduction; optimization; **subscription-fast-forwarding**.

Treatment codes

P Practical;
T Theoretical-or-mathematical.

Language

English.

Publication type

Conference-paper.

Publication year

2006.

Publication date

20060000.

Edition

2007007.

Copyright statement

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Accession number & update

0008530471 20070101.

Title

Grid-filtered region-based data distribution management in large-scale distributed simulation systems.

Conference information

Proceedings. 38th Annual Simulation Symposium, San Diego, CA, USA, 4-6 April 2005.

Sponsor(s): The Soc. for Modeling and Simulation Int.

Source

Proceedings. 38th Annual Simulation Symposium, 2005, p. 259-66, 21 refs, pp. xii+332, ISBN: 0-7695-2322-6.

Publisher: IEEE Comput. Soc, Los Alamitos, CA, USA.

Author(s)

Boukerche-A, McGraw-N-J, Dzermajko-C, Kaiyuan-Lu.

Author affiliation

Boukerche, A., McGraw, N.J., Dzermajko, C., Kaiyuan Lu, PARADISE Res. Lab., Ottawa Univ., Ont., Canada.

Abstract

In a large-scale distributed simulation, participating federates receive and send **messages** to share state data and update **subscription** and **publication** regions. The focus of data distribution management (DDM), a high level architecture (HLA) run-time infrastructure (RTI) service, is limiting and controlling the volume of data, regarding simulated entities, exchanged between participating

hosts. One of the key factors in many large-scale distributed simulations is the ability to see or be seen by other participants in the simulation. Several DDM methods have been introduced, but time performance, **message** volume and resource usage continue to be factors in the practical application of these methods. In an effort to offer a more efficient and more scalable solution to DDM, we propose an algorithm which we refer to as grid-filtered region-based DDM, that utilizes a grid overlay on the virtual space, determines the percentage of grid covered by the **subscription** or **publication** region and further filters, based on a percentage threshold, using a matching technique, like that of the region-based DDM scheme. We present the implementation details of our scheme and report on our set of experiments we have carried out to evaluate its performance.

Descriptors

 DATABASE-MANAGEMENT-SYSTEMS;  DIGITAL-SIMULATION;  GRID-COMPUTING;
 MIDDLEWARE.

Classification codes

C6185 Simulation-techniques*;
C6150N Distributed-systems-software;
C6160 Database-management-systems-DBMS.

Keywords

grid-filtered-region-based-data-distribution-management; large-scale-distributed-simulation-systems; high-level-architecture-run-time-infrastructure-service; simulated-entities; time-performance; **message-** volume; resource-usage; grid-overlay; virtual-space; **subscription-** region; **publication-** region; percentage-threshold; matching-technique; region-based-DDM-scheme.

Treatment codes

P Practical.

Language

English.

Publication type

Conference-paper.

Availability

CCCC: 0 7695 2322 6/2005/\$20.00.

Publication year

2005.

Publication date

20050000.

Edition

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Copyright statement

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1 [Cryptography and data security](#)

Dorothy Elizabeth Robling Denning

January 1982 Book

Publisher: Addison-Wesley Longman Publishing Co., Inc.

 Full text available: [pdf \(19.47 MB\)](#)

 Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

From the Preface (See Front Matter for full Preface)

Electronic computers have evolved from exiguous experimental enterprises in the 1940s to prolific practical data processing systems in the 1980s. As we have come to rely on these systems to process and store data, we have also come to wonder about their ability to protect valuable data.

Data security is the science and study of methods of protecting data in computer and communication systems from unauthorized disclosure ...

2 [Introduction of the asymmetric cryptography in GSM, GPRS, UMTS, and its public key infrastructure integration](#)

Constantinos F. Grecas, Sotirios I. Maniatis, Iakovos S. Venieris

 April 2003 **Mobile Networks and Applications**, Volume 8 Issue 2

Publisher: Kluwer Academic Publishers

 Full text available: [pdf \(107.24 KB\)](#)

 Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The logic ruling the user and network authentication as well as the data ciphering in the GSM architecture is characterized, regarding the transferring of the parameters employed in these processes, by transactions between three nodes of the system; that is the MS, actually the SIM, the visited MSC/VLR, and the AuC, which is attached to the HLR in most cases. The GPRS and the UMTS architecture carry the heritage of the GSM's philosophy regarding the user/network authentication and the data ciphe ...

Keywords: PKIs, PLMNs, asymmetric cryptography

3 [A survey of routing techniques for mobile communications networks](#)

S. Ramanathan, Martha Steenstrup

 October 1996 **Mobile Networks and Applications**, Volume 1 Issue 2

10/80, 998

Publisher: Kluwer Academic Publishers

Full text available:  pdf(276.88 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Mobile wireless networks pose interesting challenges for routing system design. To produce feasible routes in a mobile wireless network, a routing system must be able to accommodate roving users, changing network topology, and fluctuating link quality. We discuss the impact of node mobility and wireless communication on routing system design, and we survey the set of techniques employed in or proposed for routing in mobile wireless networks.

4 Performance and reliability analysis of relevance filtering for scalable distributed interactive simulation

Mostafa A. Bassiouni, Ming-Hsing Chiu, Margaret Loper, Michael Garnsey, Jim Williams
July 1997 **ACM Transactions on Modeling and Computer Simulation (TOMACS)**, Volume 7 Issue 3

Publisher: ACM Press

Full text available:  pdf(499.11 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Achieving the real-time linkage among multiple, geographically-distant, local area networks that support distributed interactive simulation (DIS) requires tremendous bandwidth and communication resources. Today, meeting the bandwidth and communication requirements of DIS is one of the major challenges facing the design and implementation of large scale DIS training exercises. In this article, we discuss the DIS scalability problem, briefly overview the major bandwidth reduction techniques c ...

Keywords: bandwidth reduction, distributed interactive simulation, real-time protocols, scalable algorithms

5 An XML query engine for network-bound data

Zachary G. Ives, A. Y. Halevy, D. S. Weld
December 2002 **The VLDB Journal — The International Journal on Very Large Data Bases**, Volume 11 Issue 4

Publisher: Springer-Verlag New York, Inc.

Full text available:  pdf(351.86 KB) Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

XML has become the lingua franca for data exchange and integration across administrative and enterprise boundaries. Nearly all data providers are adding XML import or export capabilities, and standard XML Schemas and DTDs are being promoted for all types of data sharing. The ubiquity of XML has removed one of the major obstacles to integrating data from widely disparate sources - namely, the heterogeneity of data formats. However, general-purpose integration of data across the wide area is also re

Keywords: Data integration, Data streams, Query processing, Web and databases, XML

6 Relaying protocols for two colocated users

Michael Katz, Shlomo Shamai
June 2006 **IEEE/ACM Transactions on Networking (TON)**, Volume 14 Issue S1

Publisher: IEEE Press

Full text available:  pdf(438.74 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)


We consider a wireless network where a remote source sends information to one of two colocated users, and where the second user can serve as a relay. The source's transmission is subjected to quasi-static flat Rayleigh fading, while the transmission of the relay experiences a fixed amplitude gain with a uniform random phase, capturing its close proximity to the destination. All communications share the same time/bandwidth resources, and perfect channel state information is known only to the recei ...

Keywords: ad hoc networks, amplify-and-forward, compress-and-forward, cooperative diversity, decode-and-forward, expected throughput, fading channels, outage capacity, quantize-and-forward, relay channel, sensor networks, wireless networks

7 A digital fountain approach to reliable distribution of bulk data

 John W. Byers, Michael Luby, Michael Mitzenmacher, Ashutosh Rege
October 1998 **ACM SIGCOMM Computer Communication Review , Proceedings of the ACM SIGCOMM '98 conference on Applications, technologies, architectures, and protocols for computer communication SIGCOMM '98**, Volume 28 Issue 4

Publisher: ACM Press

Full text available:  [pdf\(1.65 MB\)](#)


Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The proliferation of applications that must reliably distribute bulk data to a large number of autonomous clients motivates the design of new multicast and broadcast protocols. We describe an ideal, fully scalable protocol for these applications that we call a digital fountain. A digital fountain allows any number of heterogeneous clients to acquire bulk data with optimal efficiency at times of their choosing. Moreover, no feedback channels are needed to ensure reliable delivery, even in the face of...

8 Encryption and Secure Computer Networks

 Gerald J. Popek, Charles S. Kline
December 1979 **ACM Computing Surveys (CSUR)**, Volume 11 Issue 4

Publisher: ACM Press

Full text available:  [pdf\(2.50 MB\)](#)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

9 Notable computer networks

 John S. Quarterman, Josiah C. Hoskins
October 1986 **Communications of the ACM**, Volume 29 Issue 10

Publisher: ACM Press

Full text available:  [pdf\(4.66 MB\)](#)


Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

Computer networks are becoming more numerous and more diverse. Collectively, they constitute a worldwide metanetwork.

10 Semantic Web services

Jagadeesh Nandigam, Venkat N. Gudivada, Mrunalini Kalavala
October 2005 **Journal of Computing Sciences in Colleges**, Volume 21 Issue 1

Publisher: Consortium for Computing Sciences in Colleges

Full text available:  [pdf\(1.81 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In this paper, we describe what Semantic Web and Web services are; discuss underlying core technologies for Web services, and list how Web services manifest in modern computing. Next we show how to build and deploy a weather web service using Microsoft .NET technologies. To demonstrate the platform interoperability of web services technology, we show how to develop a client application (using Java technologies) to access the weather web service. To complement this demonstration, a web service for...

11 Trunking of TDM and narrowband services over IP Networks

James Aweya
January 2003 **International Journal of Network Management**, Volume 13 Issue 1

Publisher: John Wiley & Sons, Inc.

Full text available:  [pdf\(418.58 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The recent interest in IP as the vehicle for transporting TDM and narrowband services stems from the possibility of using a common transport network for voice, video, and data, and the flexibility with which new services can be introduced. A key step in the evolution of networks towards a 'broadband' IP-based environment is the 'graceful' interworking of the IP networks with the existing networks and services, particularly with the circuit switched telephone network. A &I ...

12 A federated approach to distributed network simulation



George F. Riley, Mostafa H. Ammar, Richard M. Fujimoto, Alfred Park, Kalyan Perumalla, Donghua Xu

April 2004 **ACM Transactions on Modeling and Computer Simulation (TOMACS)**, Volume 14 Issue 2

Publisher: ACM Press

Full text available: pdf(974.84 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We describe an approach and our experiences in applying federated simulation techniques to create large-scale parallel simulations of computer networks. Using the federated approach, the topology and the protocol stack of the simulated network is partitioned into a number of submodels, and a simulation process is instantiated for each one. Runtime infrastructure software provides services for interprocess communication and synchronization (time management). We first describe issues that arise in ...

Keywords: Simulation, distributed simulation, networks

13 Embedded systems: applications, solutions and techniques (EMBS): Code generation techniques for developing light-weight XML Web services for embedded devices



Robert van Engelen

March 2004 **Proceedings of the 2004 ACM symposium on Applied computing SAC '04**

Publisher: ACM Press

Full text available: pdf(404.19 KB) Additional Information: [full citation](#), [abstract](#), [references](#)

This paper presents specialized code generation techniques and runtime optimizations for developing light-weight XML Web services for embedded devices. The optimizations are implemented in the gSOAP Web services development environment for C and C++. The system supports the industry-standard XML-based Web services protocols that are intended to deliver universal access to any networked application that supports XML. With the standardization of the Web services protocols and the availability of t ...

Keywords: Web Services, XML, embedded systems, networking

14 Software-directed power-aware interconnection networks



Vassos Soteriou, Noel Easley, Li-Shiuan Peh

March 2007 **ACM Transactions on Architecture and Code Optimization (TACO)**, Volume 4 Issue 1

Publisher: ACM Press

Full text available: pdf(966.00 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Interconnection networks have been deployed as the communication fabric in a wide spectrum of parallel computer systems, ranging from chip multiprocessors (CMPs) and embedded multicore systems-on-a-chip (SoCs) to clusters and server blades. Recent technology trends have permitted a rapid growth of chip resources, faster clock rates, and wider communication bandwidths, however, these trends have also led to an increase in power consumption that is becoming a key limiting factor in the design o ...

Keywords: Software-directed power reduction, communication links, dynamic voltage

scaling, interconnection networks, on-chip networks, simulation

15 Summary-based routing for content-based event distribution networks

 Yi-Min Wang, Lili Qiu, Chad Verbowski, Dimitris Achlioptas, Gautam Das, Paul Larson
October 2004 **ACM SIGCOMM Computer Communication Review**, Volume 34 Issue 5

Publisher: ACM Press

Full text available:  [pdf\(2.82 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

Providing scalable distributed Web-based eventing services has been an important research topic. It is desirable to have an effective mechanism for the servers to summarize their filters for in-network preprocessing in order to optimize system performance. In this paper, we propose a summary-based routing mechanism and introduce the notion of imprecise summaries to provide a trade-off between routing overhead and event traffic. Our system uses similarity-based filter clustering to reduce overall ...

16 A potpourri of ideas for event-based processing: A case study on event dissemination in an active overlay network environment

 Sérgio Duarte, J. Legatheaux Martins, Henrique J. Domingos, Nuno Preguiça
June 2003 **Proceedings of the 2nd international workshop on Distributed event-based systems DEBS '03**


Publisher: ACM Press

Full text available:  [pdf\(1.80 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

In this paper, we describe a case study of the design and development of a group-conferencing tool suite, built on top of an overlay network based event dissemination framework, which is extensible via quality of service template plug-ins. We explain, for each of the tools, how the framework built-in conveniences were explored to create simple but effective distributed solutions, backed by the appropriate quality of service templates, whose design we also discuss.

Keywords: active networks, case study, event dissemination, multicasting, overlay networks, quality of service (QoS)

17 Accounting and management: Generic accounting configuration management for heterogeneous mobile networks

 Frank Eyermann, Peter Racz, Burkhard Stiller, Christian Schaefer, Thomas Walter
September 2005 **Proceedings of the 3rd ACM international workshop on Wireless mobile applications and services on WLAN hotspots WMASH '05**

Publisher: ACM Press

Full text available:  [pdf\(252.81 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#), [review](#)

Accounting performed by network and service providers covers the tasks of determining, collecting, and evaluating information on the service usage of their customers. This information forms the basis of the subsequent charging process. For performing these tasks in case of heterogeneous mobile networks a generic configuration management, specifically tailored at the provisioning of various Internet services is needed. This work defines a role model covering all participating entities of a distributed network based event dissemination framework, which is extensible via quality of service template plug-ins. We explain

Keywords: accounting, accounting architecture, charging, hand-over, mobile network operators, roaming, single bill

18 A new cell loss recovery method using forward error correction in ATM networks

Anna H. Hać, Xiaoyang H. Chu

March 1998 **International Journal of Network Management**, Volume 8 Issue 2

Publisher: John Wiley & Sons, Inc.

Full text available:  pdf(342.55 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

A new method using an FEC technique is proposed to enhance the ability of consecutive cell loss compensation due to buffer overflow in ATM networks. This article summarizes different applications of cell loss recovery, and presents the design of a new coding scheme and the coding/decoding algorithm. © 1998 John Wiley & Sons, Ltd.

19 **Business-to-business interactions: issues and enabling technologies**

B. Medjahed, B. Benatallah, A. Bouguettaya, A. H. H. Ngu, A. K. Elmagarmid

May 2003 **The VLDB Journal — The International Journal on Very Large Data Bases**, Volume 12 Issue 1

Publisher: Springer-Verlag New York, Inc.

Full text available:  pdf(558.34 KB) Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

Business-to-Business (B2B) technologies pre-date the Web. They have existed for at least as long as the Internet. B2B applications were among the first to take advantage of advances in computer networking. The Electronic Data Interchange (EDI) business standard is an illustration of such an early adoption of the advances in computer networking. The ubiquity and the affordability of the Web has made it possible for the masses of businesses to automate their B2B interactions. However, several issu ...


Keywords: B2B Interactions, Components, E-commerce, EDI, Web services, Workflows, XML

20 **Transport and Routing Protocols: PSFQ: a reliable transport protocol for wireless sensor networks**

Chieh-Yih Wan, Andrew T. Campbell, Lakshman Krishnamurthy

September 2002 **Proceedings of the 1st ACM international workshop on Wireless sensor networks and applications WSNA '02**

Publisher: ACM Press

Full text available:  pdf(491.58 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We propose *PSFQ* (*Pump Slowly, Fetch Quickly*), a reliable transport protocol suitable for a new class of reliable data applications emerging in wireless sensor networks. For example, currently sensor networks tend to be application specific and are typically hard-wired to perform a specific task efficiently at low cost; however, there is an emerging need to be able to re-task or reprogram groups of sensors in wireless sensor networks on the fly (e.g., during disaster recovery). Due to the ...

Keywords: reliable transport protocols, wireless sensor networks networking

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